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P-5543 PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of Brian Feeney et al.

Serial No.: 09/479,985

Examiner: S. Wong

Filing Date: January 10, 2000

Group Art Unit: 3711

For: GAME BALL WITH A URETHANE GUM RUBBER SURFACE

Board of Patent Appeals and Interferences
Commissioner for Patents & Trademarks
Washington, DC 20231

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Sir:

APPEAL BRIEF UNDER 37 C.F.R. § 1.192

This Appeal Brief is in furtherance of the Notice of Appeal that was filed for the above-referenced application on June 17, 2002.

The fees required under § 1.17, and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying Fee Transmittal.

Appellants file herewith an Appeal Brief in connection with the above-identified application, wherein claims 1 to 16 and 22 were finally rejected in the Office Action of March 18, 2002. What follows is Appellants' Appeal Brief (submitted in triplicate) in accordance with 37 C.F.R. § 1.192(a).

CERTIFICATION UNDER 37 C.F.R. 1.10

I hereby certify that this Appeal Brief (in triplicate) and the documents referred to as attached therein are being deposited with the United States Postal Service on this date **August 16, 2002**, in an envelope as "Express Mail Post Office to Addressee," mailing Label **EV116150779US**, addressed to the: Attention: Board of Patent Appeals and Interferences, Assistant Commissioner for Patents, Washington, DC 20231.

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Laura J. Nolan

I. REAL PARTY IN INTEREST (37 C.F.R. § 1.192(c)(1))

The real parties in interest in this appeal are the inventors named in the caption of this brief (Brian Feeney, Thomas J. Kennedy, III, and R. Dennis Nesbitt) and the assignee, Spalding Sports Worldwide, Inc.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 1.192(c)(2))

Currently, there are no other appeals or interferences in process or pending before the U.S. Patent and Trademark Office that will directly affect or be affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS (37 C.F.R. § 1.192(c)(3))

The status of claims set forth after the Final Office Action mailed March 18, 2002 and after the Advisory Action mailed May 22, 2002 was, and is, as follows:

Allowed claims: none

Rejected claims: 1 to 16 and 22

Withdrawn claims: 17 to 21

The present appeal is directed specifically to claims 1 to 16 and 22.

IV. STATUS OF AMENDMENTS (37 C.F.R. § 1.192(c)(4))

In the Final Office Action of March 18, 2002, the Examiner rejected claims 1 to 8, 10 to 14, 16 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry"; claims 9 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry" and Schindler et al. (U.S. Patent No. 5,636,835); and claims 1 to 16 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Molitor et al. (U.S. Patent No. 5,636,835) in view of "Manual for the Rubber Industry". There are no unentered amendments.

V. SUMMARY OF THE INVENTION (37 C.F.R. § 1.192(c)(5))

The present invention is directed to a game ball having a cover comprising an external layer of vulcanized urethane gum rubber (claim 1).

The present invention is also directed to a game ball comprising an

inflatable bladder, a layer of polymer filaments wound over the bladder, and a cover molded over the layer of filaments (claim 11). The cover comprises a vulcanized urethane gum rubber layer (claim 11). The urethane gum rubber comprises a urethane gum rubber resin obtained from the poly-addition of an isocyanate and a polyether, and the gum rubber resin is vulcanized through a sulfur-based cross-linking reaction (claim 11).

The present invention is also directed to a basketball comprising an inflatable bladder, a layer of polymer filaments wound over the bladder, and a multi-layered cover molded over the layer of filaments (claim 22). The cover comprises a vulcanized natural rubber inner layer with a density of at least 0.8 g/cm³ and a vulcanized urethane rubber exterior layer with a density of at least 0.8 g/cm³ (claim 22). The exterior layer has a higher durometer hardness and greater abrasion resistance than the inner layer (claim 22).

VI. ISSUES (37 C.F.R. § 1.192(c)(6))

Whether claims 1 to 8, 10 to 14, 16 and 22 are obvious under 35 U.S.C. § 103(a) over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry"; whether claims 9 and 15 are obvious under 35 U.S.C. § 103(a) over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry" and Schindler et al. (U.S. Patent No. 5,636,835); and whether claims 1 to 16 and 22 are obvious under 35 U.S.C. § 103(a) over Molitor et al. (U.S. Patent No. 3,119,618) in view of "Manual for the Rubber Industry".

VII. GROUPING OF CLAIMS (37 C.F.R. § 1.192(c)(7))

Claims 1 to 16 and 22 are pending and are grouped as follows:

Claims 1 to 10 are drawn to a game ball having a cover comprising vulcanized urethane gum rubber and Applicants respectfully request separate consideration of patentability.

Claims 11 to 15 are drawn to a game ball comprising an inflatable bladder, a layer of polymer filaments wound over the bladder, and a cover comprising vulcanized urethane gum rubber and Applicants respectfully request

separate consideration of patentability.

Claim 22 is drawn to a basketball comprising an inflatable bladder, a layer of polymer filaments wound over the bladder, and a multi-layer cover comprising a vulcanized natural rubber inner layer and a vulcanized urethane gum rubber exterior layer and Applicants respectfully request separate consideration of patentability.

VIII. ARGUMENTS (37 C.F.R. § 1.192(c)(8))

1. The Examiner's rejection of claims 1 to 8, 10 to 14, 16 and 22 as obvious under 35 U.S.C. § 103(a) over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry" is erroneous and must be reversed.

The Examiner has rejected claims 1 to 8, 10 to 14, 16 and 22 as being unpatentable under 35 U.S.C. § 103(a) over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry". The basis for the Examiner's rejection is as follows:

Claims 1 to 8, 10 to 14, 16 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Walker et al. in view of "Manual for the Rubber Industry". Walker et al. disclose a basketball construction including a bladder (12), a layer of filaments (16) wound over the bladder and a cover (34) of polyurethane for the ball. However, Walker et al. lack the teaching for the polyurethane cover to be a particular type of polyurethane, specifically, vulcanized urethane gum rubber.

"Manual for the Rubber Industry" reveals the manufacturing process for vulcanized urethane gum rubber and notes its advantages. Note page 175 which states that the vulcanized urethane gum rubber possesses "particularly good mechanical properties" and "wear resistance under many service conditions is better than that of other elastic materials". Thus, it would have been obvious to one of ordinary skill in the art to replace the polyurethane of Walker et al. with that taught by "Manual for the Rubber Industry" in order to provide an improved polyurethane with better mechanical properties and wear resistance.

(See Office Action of May 30, 2001 pp. 3-4.)

The Examiner also made the following additional observations:

The argument that the vulcanized urethane gum rubber of the "Manual for the Rubber Industry" is a natural rubber is noted. Attention is directed to page 175, lines 5-10 which state that the vulcanized urethane gum rubber is based on polyurethane. Thus, the "Manual for the Rubber Industry" provides a suggestion to replace the polyurethane cover of Walker et al. with the vulcanized urethane gum rubber for the advantages as taught by the "Manual for the Rubber Industry".

(See Office Action of October 26, 2001 p. 4.)

A. The Examiner's Cited References

U.S. Patent No. 5,310,178 to Walker et al. is directed to a basketball with a synthetic cover, specifically a basketball having a molded natural rubber carcass having a plurality of polyurethane inserts formed with matted fibers of nylon or polyester, and these inserts are adhered to the exterior surface of the carcass between the channels (Abstract, column 2 lines 46 to 53, and claims 1 and 2). The purpose of Walker et al. is to provide an improved synthetic basketball with superior characteristics like real leather covered balls (columns 1 and 2).

"Manual for the Rubber Industry" is a publication of Bayer AG and is directed to many types of rubbers. The specific section at issue is titled "Urepan Urethane Rubber" (beginning at p. 175), and Urepan rubbers are a group of urethane rubber grades available from Bayer. The reference describes various properties, uses and grades of Urepan materials.

B. The Subject Matter of Claims 1 to 8, 10 to 14, 16 and 22 are Patentably Distinguishable Over the Cited Art

Claims 1 to 8, 10 to 14, 16 and 22 are not obvious in light of the combination of Walker et al. with "Manual for the Rubber Industry".

First, no motivation exists to combine Walker et al., which teaches improved synthetic basketballs with superior characteristics like real leather covered balls, with "Manual for the Rubber Industry", which

teaches a manufacturing process for vulcanized urethane gum rubber. One skilled in the art, upon reading Walker et al. with "Manual for the Rubber Industry", would not be motivated to replace the cover of Walker et al., with a rubber cover of any kind. The cover of Walker is a synthetic cover having a plurality of polyurethane inserts formed with matted fibers of nylon or polyester, and these inserts are adhered to the exterior surface of the carcass between the channels. The purpose of Walker et al. is to provide a basketball with a synthetic cover that feels like leather and has the characteristics of leather, and one reading Walker et al. would not have any desire or motivation to replace the synthetic cover with leather-like feel with a rubber cover since Walker et al. teaches that rubber covers are inferior to leather and synthetic leather covers. Clearly, the fact that a rubber cover could possibly be used on a basketball, such as that in Walker et al., does not mean that one skilled in the art would be motivated to combine portions of references directed to two separate and distinct cover types. The two cover types, synthetic leather and rubber, are for two different classes or channels of game balls. Therefore, the Examiner's reasoning for combining a reference relating to synthetic leather covers with a reference relating to rubber manufacturing processes, clearly does not show how one skilled in the art would be motivated to combine the different technologies or cover types.

The Examiner's combination of Walker et al. and "Manual for the Rubber Industry" is also impermissible hindsight reconstruction because the Examiner picked only the portions of the references that would support his position, to the exclusion of the other parts necessary to appreciate what the references suggest to one skilled in the art. Choosing to focus only on the polyurethane solution that is used in the synthetic cover of Walker et al. is also selective blindness to the teachings of the primary reference, and this constitutes improper picking

and choosing. The reference must be used as a whole. The references themselves do not teach one skilled in the art to combine synthetic leather technology with rubber technology. No motivation can be found to combine the two distinct technologies in the Examiner's cited references, and the Examiner's attempt to combine such references is impermissible hindsight reconstruction. In fact, Walker et al. teaches away from using a rubber cover (see, for example, column 1, lines 30 to 36, where Walker et al. lists cover types in descending order of playing characteristics, and polyurethane and polyvinyl chloride are lowest).

The Examiner has failed to consider the primary reference, Walker et al., as a whole, focusing instead on only one of the materials making up the cover. By focusing on the one material (i.e., the polyurethane solution), the Examiner has ignored the clear teaching in patentee's specification regarding improved rubber covers for game balls. The Examiner has impermissibly made an inference that all covers or all materials containing or related to polyurethane, could be lumped together into one category and used interchangeably. The Examiner then cites a secondary reference, "Manual for the Rubber Industry", to provide a replacement cover material for the synthetic leather cover of Walker et al.

The Examiner has mischaracterized the teachings of Walker et al. The cover of Walker et al. is not a polyurethane rubber cover, but instead a synthetic cover produced using a polyurethane solution and polymeric fibers. The polyurethane material that is used in the cover of Walker et al. is only used to impregnate polymeric fibers (preferably nylon or polyester) and to simulate leather, thus providing a softer feel on the cover at a reduced cost as compared to high grade leathers. The polyurethane of Walker et al.'s cover is not a polyurethane rubber, therefore one of ordinary skill in the art would not be motivated to replace Walker et al.'s cover with a urethane rubber cover.

The Examiner's cited references neither teach nor suggest combining art for a synthetic leather cover that has inserts formed from a polyurethane solution and polymeric fibers with a reference directed to rubber materials to obtain the game ball of claim 1. Similarly, the Examiner's cited references provide no motivation for combining their teachings to obtain the game ball and basketball of independent claims 11 and 22 respectively.

Claims 2 to 8, 10 and 12 to 14, which are dependent or ultimately dependent from claims 1 and 11 and recite additional features, are also not obvious in light of the Examiner's cited references since no motivation exists in the Examiner's references.

2. The Examiner's rejection of claims 9 and 15 as obvious under 35 U.S.C. § 103(a) over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry" and Schindler et al. (U.S. Patent No. 5,636,835) is erroneous and must be reversed.

The Examiner has rejected claims 9 and 15 as being unpatentable under 35 U.S.C. § 103(a) over Walker et al. (U.S. Patent No. 5,310,178) in view of "Manual for the Rubber Industry" and Schindler et al. (U.S. Patent No. 5,636,835). The basis for the Examiner's rejection is as follows:

Claims 9 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Walker et al. in view of "Manual for the Rubber Industry" and Schindler et al. The combination of Walker et al. in view of "Manual for the Rubber Industry" lacks the teaching for the inner layer to be foamed.

Schindler et al. reveal a basketball construction including a bladder (12), a layer of windings (14), an inner layer (16) of foamed rubber and a cover (18). It would have been obvious to one of ordinary skill in the art to replace the inner layer of Walker et al. with that of Schindler et al. for the reasons advanced by Schindler et al.

(See Office Action of May 30, 2001 pp. 3-4.)

A. The Examiner's Cited References

U.S. Patent No. 5,310,178 to Walker et al. is directed to a

basketball with a synthetic cover, specifically a basketball having a molded natural rubber carcass having a plurality of polyurethane inserts formed with matted fibers of nylon or polyester, and these inserts are adhered to the exterior surface of the carcass between the channels (Abstract, column 2 lines 46 to 53, and claims 1 and 2). The purpose of Walker et al. is to provide an improved synthetic basketball with superior characteristics like real leather covered balls (columns 1 and 2).

"Manual for the Rubber Industry" is a publication of Bayer AG and is directed to many types of rubbers. The specific section at issue is titled "Urepan Urethane Rubber" (beginning at p. 175), and Urepan rubbers are a group of urethane rubber grades available from Bayer. The reference describes various properties, uses and grades of Urepan materials.

U.S. Patent No. 5,636,835 to Schindler et al. is directed to padded inflatable game balls consisting of a spherical rubber bladder, a layer of winding surrounding the bladder, a cellular sponge layer surrounding the winding, and seams and external skin panel sections surrounding the cellular sponge layer (Abstract).

B. The Subject Matter of Claims 9 and 15 are Patentably Distinguishable Over the Cited Art

Claims 9 and 15 are not obvious in light of the combination of Walker et al. with "Manual for the Rubber Industry" and Schindler et al.

First, as previously discussed, no motivation exists to combine Walker et al., which teaches improved synthetic basketballs with superior characteristics like real leather covered balls, with "Manual for the Rubber Industry", which teaches a manufacturing process for vulcanized urethane gum rubber. One skilled in the art, upon reading Walker et al. with "Manual for the Rubber Industry", would not be motivated to replace the cover of Walker et al., with a rubber cover of any kind. The cover of Walker is a synthetic cover having a plurality of

polyurethane inserts formed with matted fibers of nylon or polyester, and these inserts are adhered to the exterior surface of the carcass between the channels. The purpose of Walker et al. is to provide a basketball with a synthetic cover that feels like leather and has the characteristics of leather, and one reading Walker et al. would not have any desire or motivation to replace the synthetic cover with leather-like feel with a rubber cover since Walker et al. teaches that rubber covers are inferior to leather and synthetic leather covers.

Appellants' invention is not directed to a synthetic leather covered game ball. The cover of Appellants' game ball comprises a layer of vulcanized urethane gum rubber. As discussed above, the Examiner used impermissible hindsight reconstruction and improper picking and choosing to combine Walker et al. and "Manual for the Rubber Industry". There is no motivation for the combination of Walker et al. and "Manual for the Rubber Industry" to produce Appellants' invention. Therefore, the addition of another secondary reference, Schindler et al., does not remedy this defect. Since the Examiner has failed to show the desire, or motivation, to combine Walker et al. with "Manual for the Rubber Industry", the addition of Schindler et al. does not remedy this fundamental defect. Therefore, since claims 9 and 15 recite an additional foamed inner layer and depend, or ultimately depend from claims 1 and 11, which are not obvious over Walker et al. and "Manual for the Rubber Industry", claims 9 and 15 are not obvious over Walker et al. in view of both "Manual for the Rubber Industry" and Schindler et al.

3. The Examiner's rejection of claims 1 to 16 and 22 as obvious under 35 U.S.C. § 103(a) over Molitor et al. (U.S. Patent No. 3,119,618) in view of "Manual for the Rubber Industry" is erroneous and must be reversed.

The Examiner has rejected claims 1 to 16 and 22 as being unpatentable under 35 U.S.C. § 103(a) over Molitor et al. (U.S. Patent No. 3,119,618) in view of "Manual

for the Rubber Industry". The basis for the Examiner's rejection is as follows:

Claims 1-16 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Molitor et al. (U.S. Patent No. 3,119,618) in view of "Manual for the Rubber Industry". Molitor et al. disclose an inflated game ball comprising a cover (12), an inner carcass (11) and a sponge layer (15). Note column 2, lines 31 and 32 of Molitor et al. which teach that the cover may be formed from rubber.

It would have been obvious to one of ordinary skill in the art to form the cover of Molitor et al. from the material of the "Manual for the Rubber Industry" in order to take advantage of that material's physical characteristics.

Regarding claims 9 and 15, Molitor et al. teach the use of a sponge layer.

(See Office Action of October 26, 2001 pp. 3-4.)

The Examiner also made the following additional observations:

Regarding the combination of Molitor et al. in view of the "Manual for the Rubber Industry", the motivation to combine the references again lies within the teachings of the "Manual for the Rubber Industry". The advantages as stated by the "Manual for the Rubber Industry" and reiterated above would also be desirable with the game ball as taught by Molitor et al. Further, as noted by applicant, Molitor states that the cover may be made from any material known in the art at the time such as rubber, leather or any other well known material (column 2, lines 31-33). Thus, it would have been obvious to one of ordinary skill in the art to form the cover of the ball of Molitor et al. from a vulcanized urethane gum rubber in order to take advantage of that material's physical characteristics as noted by the "Manual for the Rubber Industry".

(See Office Action of March 18, 2002 p. 5.)

A. The Examiner's Cited References

U.S. Patent No. 3,119,618 to Molitor et al. is directed to a ball with a sponge layer between the inner carcass and the outer cover, and this sponge layer provides sufficient yielding of the outer surface of the ball to enhance handling when gripped (column 1, lines 27 to 31).

Molitor et al. disclose that the cover can be any material known at the

time, such as rubber, leather or any other well known material (column 2, lines 31 to 33). Molitor et al. do not disclose specific types of cover materials at all because the invention is primarily concerned with the sponge layer of the ball.

"Manual for the Rubber Industry" is a publication of Bayer AG and is directed to many types of rubbers. The specific section at issue is titled "Urepan Urethane Rubber" (beginning at p. 175), and Urepan rubbers are a group of urethane rubber grades available from Bayer. The reference describes various properties, uses and grades of Urepan materials.

B. The Subject Matter of Claims 1 to 16 and 2 are Patentably Distinguishable Over the Cited Art

Claims 1 to 16 and 22 are not obvious in light of the combination of Molitor et al. with "Manual for the Rubber Industry".

The cover of Appellants' game ball comprises a particular cover type, specifically a layer of vulcanized urethane gum rubber to improve durability and abrasion resistance. Molitor et al. is directed to balls having enhanced gripping capability due to a sponge layer between the carcass and the cover, and a person of ordinary skill in the art would have no guidance from Molitor et al. regarding a particular cover material since Molitor et al. does not disclose or appreciate the benefits of urethane gum rubber (or any other particular cover type), particularly a cover having improved durability and abrasion resistance.

The Examiner's combination of Molitor et al. and "Manual for the Rubber Industry" is impermissible hindsight reconstruction because the Examiner picked only the portion of the references that would support his position, to the exclusion of the other parts necessary to appreciate what the references suggest to one skilled in the art. A prior patent, such as Molitor et al., must be considered as a whole. Choosing to focus on the portion of Molitor et al. that lists many cover options

generally and choosing a particular type from them (i.e., rubber) is also selective blindness to the teachings of the primary reference, and this constitutes improper picking and choosing. The reference must be used as a whole.

The Examiner has failed to consider the primary reference, Molitor et al., as a whole, focusing instead on only one of the materials listed as possible cover material. By focusing on the one cover type (i.e., rubber) instead of the full intent and disclosure of Molitor et al., the Examiner has ignored the clear teaching in patentee's specification regarding improved rubber covers for game balls. The Examiner has impermissibly made an inference that all covers could be lumped together into one category and used interchangeably. The Examiner then cites a secondary reference, "Manual for the Rubber Industry", to provide a replacement cover material and states that the motivation to combine the references is provided by the secondary reference itself.

The only guidance is that supplied by the Examiner in making the rejection. There is no motivation or teaching to combine Molitor et al. with "Manual for the Rubber Industry". When the prior art references require a selective combination to render obvious a subsequent invention, there must be some reason for the combination other than hindsight gleaned from the invention itself. Something in the prior art as a whole must subject the desirability of making the combination. The Examiner has failed to show the desire, or motivation, to combine Molitor et al. with "Manual for the Rubber Industry".

The Examiner's cited references neither teach nor suggest combining art for balls having enhanced gripping capability due to a sponge layer between the carcass and the cover with a reference directed to rubber materials to obtain the game ball of claim 1. Similarly, the Examiner's cited references provide no motivation for combining their teachings to obtain the game ball and basketball of independent claims 11

and 22 respectively.

Claims 2 to 10 and 12 to 15, which are dependent or ultimately dependent from claims 1 and 11 and recite additional features, are also not obvious in light of the Examiner's cited references since no motivation exists in the Examiner's references.

IX. CONCLUSION

In view of the above, Appellants respectfully submit that claims 1 to 16 and 22 are non-obvious and patentable over the cited references. Accordingly, it is respectfully requested that the Examiner's rejection of claims 1 to 16 and 22 be reversed.

Respectfully submitted,

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APPENDIX A

The claims standing on appeal are:

1. A game ball having a cover, said cover comprising an external layer of vulcanized urethane gum rubber.
2. The game ball as claimed in claim 1, wherein said urethane gum rubber comprises a urethane gum rubber obtained from the poly-addition of an isocyanate and a polyether; and said urethane gum rubber is vulcanized through a sulfur-based cross-linking reaction.
3. The game ball as claimed in claim 1, wherein said urethane gum rubber comprises a urethane gum rubber obtained from the poly-addition of a diphenylmethane diisocyanate and a C₄ polyether; and said urethane gum rubber is vulcanized through a sulfur-based cross-linking reaction.
4. The game ball as claimed in claim 2 wherein said cover further comprises a vulcanization agent selected from the group consisting of sulfur, mercaptobenzothiazole, dibenzothiazyl disulphide, zinc chloride complex of dibenzothiazyl disulphide and mixtures thereof.
5. The game ball of claim 4 wherein said cover has a composition comprising 50 to 100 parts of said urethane rubber resin and 2.5 to 12.0 parts of said vulcanization agent expressed parts by weight based on 100 parts urethane.
6. The game ball as claimed in claim 5, wherein said composition further comprises 5 - 50 parts of a reinforcing filler.
7. The game ball of claim 1 wherein said cover comprises an inner layer overlayed by said vulcanized urethane gum rubber layer.

8. The game ball of claim 2 wherein said inner layer is comprises of cured natural rubber.
9. The game ball of claim 8 wherein said inner layer is foamed and has a density within the range of 0.5 to 0.95 g/cm³.
10. The game ball of claim 1 wherein said cover external layer has a Shore A durometer hardness within the range of 45 to 85.
11. A game ball comprising:
 - an inflatable bladder;
 - a layer of polymer filaments wound over said bladder; and
 - a cover molded over said layer of filaments, said cover comprising a vulcanized urethane gum rubber layer, wherein said urethane gum rubber comprises a urethane gum rubber obtained from the poly-addition of an isocyanate and a polyether; and said urethane gum rubber is vulcanized through a sulfur-based cross-linking reaction.
12. The game ball of claim 11 wherein said cover consists essentially of said urethane gum rubber layer.
13. The game ball of claim 11, wherein said cover further comprises a vulcanized natural rubber layer, said natural rubber layer positioned between said layer of filaments and said vulcanized urethane gum rubber layer.
14. The game ball of claim 13 wherein said cover consists essentially of said urethane gum rubber layer overlying said natural rubber layer.
15. The game ball of claim 13 wherein said inner layer of said cover is foamed to attain a density of 0.5 to 0.95 g/cm³.

16. The game ball of claim 13 wherein said inner layer has a thickness in the range of 0.01 - 1.6 mm and said urethane gum rubber layer has a thickness in the range of 0.3 to 1.9 mm.

22. A basketball comprising:

an inflatable bladder;

a layer of polymer filaments overlying said bladder; and

a multi-layered cover overlying said layer of filaments, said cover comprising a vulcanized natural rubber inner layer with a density of at least 0.8 g/cm^3 overlying said layer of filaments and a vulcanized urethane rubber exterior layer with a density of at least 0.8 g/cm^3 overlying said inner layer, said exterior layer having a higher durometer hardness and greater abrasion resistance than said inner layer.